

STAFF REPORT

AGENDA ITEM: APCD Draft Rule: Coastal Dunes Dust Control Requirements

STAFF: Phil Jenkins, Chief, OHMVR Division

DATE: October 14, 2011

Issue: Background and update on the status of the Draft “Fugitive Dust” Rule proposed by the San Luis Obispo County Air Pollution Control District (SLO APCD).

Background: Beginning in 2004, the SLO APCD initiated studies to characterize seasonally-recurrent elevated concentrations of airborne particulate matter (dust) detected in the south San Luis Obispo County area (south county). Particulate matter (PM) that is 10 microns or less in diameter (PM10) has the potential to be an inhalation health hazard if the PM10 concentration is high and sustained (Note: For scale, the width of human hair ranges approximately from 50 microns to 100 microns. PM10 is generally not visible to the eye). The state ambient air quality standard for PM10 is 50 micrograms per cubic meter (ug/m^3) as averaged over a 24 hour period. The 24-hour federal PM10 standard is $150 \text{ ug}/\text{m}^3$. The SLO APCD is mandated to enforce these state and federal standards.

In 2007, the SLO APCD issued a report on air monitoring it conducted in the south county in 2004 and 2005. The report, titled *Nipomo Mesa Particulate Study 2007*, indicated that elevated concentrations of PM10 detected in the Nipomo Mesa area of the south county occur seasonally, and are usually coincident with high winds that blow onshore in the spring. The PM10 was found to be composed mostly of soil- and rock-derived materials, as opposed to particles from combustion. The report concluded that the PM10 source or sources likely lie between the ocean and the Nipomo Mesa and that some data suggest PM10 emanates from the riding area of the Oceano Dunes State Vehicular Recreation Area (SVRA).

In 2008, the SLO APCD conducted a follow-up study, known as Phase 2, to better discern the source of PM10 impacting the Nipomo Mesa. The study incorporated a network of short-term (two weeks) and long term (several months to one year) air monitoring stations, along with wind speed measurements, sand movement measurements, and soil analyses. It also compared PM10 measurements with Oceano Dunes SVRA attendance numbers to discern if there was a connection between high PM10 and times of peak park attendance.

The SLO APCD summarized its Phase 2 findings in the February 2010 document, South County Phase 2 Particulate Study (Phase 2 report). The Phase 2 report concluded that PM10 does generate in the dunes due to “saltation”—a process by which sand grains are bounced and rolled along a sand surface. With each sand grain impact, other grains of various sizes are released and caught by the wind. This dune-forming process at Oceano Dunes was first described in 1941 by R.A. Bagnold.

At the conclusion of the Phase 2 report, the document claims, based on the data presented, that sand rolls more readily (with less wind) in the riding area of the dunes than in areas where there is no riding—therefore the riding area has the potential to generate more PM10 from the saltation process than areas outside the riding area. From the analysis of Oceano Dunes SVRA attendance and downwind PM10 readings, the Phase 2 report concludes there is a noticeable correlation. Agricultural fields and a petroleum coke-refining facility operated by ConocoPhillips lie between the dunes and the Nipomo Mesa. The Phase 2 report also concluded that neither agricultural activities nor coke-refining operations contributed to the PM10 impacting the Nipomo Mesa.

The SLO APCD staff presented the Phase 2 report to the SLO APCD Board—a 12-member panel that includes the five county supervisors and seven municipal representatives—when the Board convened in March 2010.

At the same Board meeting, the OHMVR Division expressed in letter-form and in person through OHMVR Division counsel, that it did not accept the conclusions of the Phase 2 report. This was based on a review of the Phase 2 report conducted by the California Geological Survey (CGS), dated March 18, 2010, and Illingworth & Rodkin, dated March 19, 2010, both of which were included in the submittal to the Board.

The CGS review found that conclusions in the Phase 2 report were not supported by the data presented. Among the CGS findings, it was revealed that measured sand movement in the riding area of the dunes was correlated not to wind measured within the dunes, but to wind measured 2.5 miles inland, where the wind speed is consistently and significantly less than on the dunes. The document prepared by Illingworth & Rodkin, experts in air quality, reiterated this finding, stating, “The Phase 2 report’s reliance on the wind data from the CDF site [the location located 2.5 miles inland] for evaluating sand flux in the SVRA is not appropriate, resulting in unfounded conclusions regarding sand flux from the different study areas.” This casts serious doubt on the principal conclusion of the Phase 2 report, that PM10-producing “saltation” occurs at lower wind speeds in the riding area of the Oceano Dunes SVRA.

Additionally, the conclusion that agricultural operations and operations at the ConocoPhillips coke-refining facility do not contribute to PM10 measured on Nipomo Mesa was based on 16 days of data collection with no additional data or justification provided in the report as to how this data could be correlated to a year-round timeframe. The review documents are attached for reference.

The data used to generate the Phase 2 report was not available to the public when the report was issued in February 2010, nor was it available at the time of the March 2010 SLO APCD Board meeting. At the urging of the OHMVR Division, the Board instructed the SLO APCD staff to make the data available. Among the datasets the OHMVR Division wished to review was the dataset regarding the Phase 2 conclusion that there was some correlation between OHV activity in the riding area of the park and higher concentrations of PM10 detected downwind at Nipomo Mesa. In public presentations made by SLO APCD staff regarding the Phase 2 report and in correspondence to the OHMVR Division, SLO APCD made much stronger claims about this correlation than was presented in the Phase 2 report.

The data on which these claims were made was eventually provided to the OHMVR Division. The OHMVR Division requested TRA Environmental Sciences, Inc. (TRA) to review the data. A report of TRA's findings was presented to the OHMVR Division in May 2010. Its analysis showed that when compiling an annual dataset of PM10 readings, SLO APCD actually used 13 months worth of data rather than 12, incorporating March 2008 and March 2009. March is the windiest month in the south county and also records the highest PM10 readings, and counting it twice had skewed the data. Several other inconsistencies and inaccuracies were also revealed, all of which led TRA to conclude that "no quantitative conclusion can be drawn from the data," and "claiming causation from association is unsupported,...based on an erroneous analysis of an incorrect 13-month data range [using] a method that is inappropriate to the purpose claimed, and produces no statistically significant result." The TRA review document is attached for reference.

The OHMVR Division provided the TRA document to the SLO APCD Board in May 2010, and Tom Reid, principal at TRA, presented his findings to the Board. Again, no action regarding this additional information was taken by the SLO APCD Board.

During that same May 2010 Board meeting, the Chief of the OHMVR Division, Phil Jenkins, reiterated that the OHMVR Division does not accept the conclusions of the Phase 2 report—namely that OHV activity is to blame for PM10—based on the three separate reviews of the

document. Chief Jenkins also acknowledged that elevated PM10 concentrations recorded on the Nipomo Mesa were real and that the OHMVR Division was willing to work cooperatively with the SLO APCD staff to assist with trying to better quantify and minimize PM10 on the Nipomo Mesa, which may result in part from the natural dune-forming and dune-migration processes.

What has not been disputed is that saltation is capable of generating PM10. Working collaboratively, the OHMVR Division and SLO APCD staff hired a consultant—the Desert Research Institute (DRI), from Reno, Nevada—to design and implement pilot projects to quantify the effects vegetation and artificial elements (hay bales) had on reducing saltation. Additionally, DRI measured the emissivity (the potential for a surface material to emit dust) of different areas in the Oceano Dunes SVRA—both the ride area and no-ride areas—to determine if any one location had more potential to emit dust than another. To test emissivity and cover as much ground as possible in a limited timeframe, DRI used two of the same type of instrument, a Portable In-Situ Wind Erosion Laboratory, or PI-SWERL.

DRI found that when the sand surface is at least partially covered with vegetation or hay bales, the wind at the surface is blocked and sand movement (saltation) is minimized.

It also found there to be very little difference in the potential of different dune areas to emit dust, whether inside or outside the ride area. It is noteworthy that the emissivity in the ride area, where the hay bales were subsequently placed for the second part of DRI's investigation, was found to have the lowest potential to emit dust. The DRI report, dated September 15, 2011, is attached here for reference.

Another measure of collaboration is the OHMVR Division's commitment to working with SLO APCD staff to develop a Particulate Matter Reduction Plan (PMRP) that would present best management practices to implement to minimize blowing sand and its effects. The purpose of the DRI study was to inform the PMRP process.

Independent of the DRI investigation, SLO APCD staff developed a draft "fugitive dust" rule (Draft Rule) that pertains to the ODSVRA. The Draft Rule, issued in September 2011 as Draft Rule 1001, is attached here for reference.

The OHMVR Division was aware the Draft Rule was to be developed, but has expressed that it should be developed as part of the PMRP process and should not be punitive. As written, the Draft Rule gives the SLO APCD the authority to fine the State of California \$1,000 per day for

every day PM10 levels monitored downwind of the ODSVRA ride area exceed specified concentration levels when compared to levels recorded at unspecified "control" sites.

The Draft Rule was presented to the SLO APCD Board during its September 28, 2011 meeting. At that same meeting, Chief Jenkins voiced his objections to the punitive aspect of the Draft Rule and submitted those same objections in writing to the Board. That comment letter from the OHMVR Division Chief Phil Jenkins to the SLO APCD Board chair, Bruce Gibson, is attached here for reference.

The SLO APCD Board passed a motion at the conclusion of its September 2011 meeting, instructing SLO APCD staff to make modifications to the Draft Rule, prior to the next SLO APCD Board meeting on November 16, 2011, at which time it will be reviewed for possible adoption for the final rule.